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Theo A. F. Kuipers

AESTHETIC INDUCTION VERSUS COHERENCE

REPLY TO PAUL THAGARD

Paul Thagard's brief contribution deserves a long reply, but I confine myself here to some basic issues. I start with some concessions relative to SiS regarding simplicity and analogy, followed by rebutting Thagard's general and specific reserves about my recent naturalistic-cum-formal inductive account of the relation between beauty and truth. Finally, I raise some doubts about the exhaustiveness of his coherence account of that relation and its supposed incompatibility with my account.

Aesthetic Induction, Empirical Success, and Truth Approximation

Let me start by reporting some new considerations that are relevant to Thagard's contribution. In SiS I went as far as to claim that simplicity should only play a role in case of equal success (SiS, p. 238, and Section 11.2) and for analogy I saw no role at all (SiS, p. 297). Contrary to my previous beliefs, at the time of completion of SiS, very much stimulated by reading McAllister (1996), I was beginning to understand that there might be a relation between truth and simplicity, and, more recently, stimulated by a discussion with Thagard when he visited Groningen on the occasion of Alexander van den Bosch's promotion, even one between truth and analogy. Hence, in the light of my recent article on beauty and truth (Kuipers 2002), I have to qualify these claims in SiS.

Since "simplicity" figures, at least in certain periods of certain disciplines, in the prevailing aesthetic canon, to use McAllister's nice phrase, it has cognitive merits related to empirical success and even to truth approximation, which scientists favoring the dominant theory may value more than some empirical successes of a new theory that are failures of the old one. Repairs may well come to grips with these failures. Similarly, as McAllister (1996) also illustrates and my article implicitly justifies, "analogy" may also be seen

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as a nonempirical feature of certain theories that may play a cognitively justified role. Certainly, the relative weight assigned to such features should take into account that these features are based on “meta-induction,” that is, induction of a recurring nonempirical feature correlating with empirical success, whereas general empirical successes are based on “object-induction,” induction of a regularity about (the behavior of) a certain kind of objects. Although object-inductions are not very trustworthy, they are certainly more trustworthy than meta-inductions.

To be sure, the “uniform” notion of being “empirically more successful,” as presented in ICR and SiS, leaving no room for empirical failures compensated by more impressive empirical successes, can be extended to the more general notion of “more successful,” taking also “nonempirical” successes and failures uniformly into account. However, as explained in Section 6 of my article on beauty and truth, the interesting cases of nonempirical considerations come into the picture when they point in another direction than the empirical considerations. This would require a combined definition of ‘more successfulness’ taking relative weights of different kinds of considerations into account. Depending on one’s weights, to use an example suggested to me by Thagard, one may then value the phlogiston theory or even the oxygen theory as less successful than the classical theory, according to which there are only four substances, viz., air, earth, fire, and water, because this theory is much simpler than the two famous competing theories.

I am happy to agree with Thagard’s claim that my view of the relation between beauty and empirical success needs new experimental and historical evidence, although I would not say that the well established “mere-exposure effect” is irrelevant. In the article I argue that the aesthetic induction may be a variant of the mere-exposure effect, more precisely, a concretization, provisionally called a qualified-exposure effect. In line with its naturalized approach, I suggest at the end a number of experiments with normal and toy pieces of art and with scientific examples to establish the conditions and limitations of the effect. Moreover, further evidence for the varying character of the aesthetic canon when different phases or different research programs of the same discipline or of different disciplines are compared would strengthen the basic ideas around aesthetic induction as such and its diagnosis as a variant of the mere-exposure effect. Finally, as I also stress in my reply to Miller, in the companion volume, my refined claim about aesthetic induction can be falsified: determine a nonempirical feature which happens to accompany all increasingly successful theories in a certain area from a certain stage on and which is not generally considered beautiful by the relevant scientists. To be sure, the common interesting point of our diverging views is, of course, that both suggest (comparative) experiments and possible pieces of historical

evidence (see below), a rare but welcome aspect of primarily philosophical theories.

Apparently I did not convince Thagard by arguing in ICR (p. 162) that there is a direct connection between empirical success and truth, and that we do not need his detour, as I explained in SiS (p. 298). The crucial point seems to be that I identify *the truth* as the strongest true theory (given a domain and a vocabulary) “rather than as how the world really is.” Here Thagard is transgressing the boundaries of my kind of constructive realism and enters some kind of essentialist realism. In the introductory chapter to this volume I summarize my direct argument for a relation between truth and empirical success. In my reply to Hans Mooij in the other volume I try to specify my metaphysical position in some more detail. Since Thagard’s truth does not exist in my view, his detour argument, that empirical success is a sign of truth, essentially pertains to my non-essentialist kind of truth(s), like my direct argument.

Emotional Coherence

Let me now turn to Thagard’s theory of beauty as an aspect of emotional coherence. According to him, “scientists find a theory beautiful when it is highly coherent with the evidence and with their other beliefs,” where simplicity, symmetry and analogy (of which symmetry is a special case) are intrinsically part of the coherence calculation. In SiS (Section 11.2), I argue in general against Thagard’s “unstratified” theory of explanatory coherence (and its implementation in the ECHO program), in favor of the stratified priority of explanatory superiority (implemented by the evaluation matrix EM), by using a meta-application of simplicity considerations. I show that both are equally successful in accounting for all historical choices provided and “prepared” by Thagard himself, whereas ECHO is much more complicated than EM. (See my reply to Vreeswijk.) In other words, Thagard’s coherence theory asks for historical cases in which explanatory superiority is sacrificed to simplicity, which would go against the stratified view.

Thagard associates the beauty of theories with all kinds of coherence. Hence, incoherent aspects of theories should be seen as ugly. Thagard (2000, pp. 199-200) argues in general that symmetry is aesthetically appreciated for its contribution to coherence, and asymmetry is ugly due to its incoherence. He mentions the symmetry of (most) human faces, as opposed to the asymmetry of a misshapen face. This type of example is interesting for two reasons. First, after habituation to a misshapen face, e.g. of a movie star, we may come to find it very beautiful. Second, we are used to pictures of the arrangement of

organs in the human body, including all kinds of asymmetries, and many of us will find the composition very beautiful, not least for these asymmetries. Hence, an overall coherence account of beauty is difficult to combine with the fact that at least certain people appreciate incoherencies, including scientists. The biologist Stephen Gould, for example, stresses in an interview (Kayzer 2000) that he, in contrast to the physicist Steven Weinberg, counts diversity, unrepeatable contingencies and irregularities among the sources of his ultimate aesthetic satisfaction. Gould mentions as examples of great aesthetic satisfaction the diversity of a certain species of land snails, called cerions (p. 32), and the incoherencies in the revolutions of earth and moon, which make it impossible to design a coherent calendar (p. 29). Ironically enough, Weinberg (Kayzer 2000, p. 78; see also Weinberg 1993, p. 119) mentions the gravedigger scene in Shakespeare's *Hamlet* as a surprising intermezzo in a logical sequence of events, which, according to Weinberg, illustrates the fact that in the arts there are even higher aesthetic phenomena than in science. Hence, Gould's claim and examples seem to be incompatible with an overall coherence view of beauty in science, and Weinberg's example at least suggests that coherence cannot be the only source of aesthetic appreciation in the arts, which makes it difficult to understand why there would be no experiences of beautiful incoherencies in science.

In the last part of his contribution Thagard gives a very clear statement of our diverging psychological and philosophical explanations of why beauty is a road to the truth. However, from the above it will be clear that I am not yet converted to his view. But I would also like to stress that they may be less incompatible than Thagard suggests. First, as to the psychological side, overall coherence might well be a feature that in certain disciplines and at certain stages can belong to the "aesthetic canon" as the result of aesthetic induction. Second, as to the philosophical side, I have already indicated that Thagard's supposed indirect connection between beauty and the essentialist truth, that is, the truth about how the world really is, boils down to a connection between beauty and constructive truths, for which connection there is a direct argument which, as a matter of fact, has not been disputed by Thagard.

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